

Early Detection Surveillance: What FWS Field Staff Need to Know

Participant's Guide

Revised July 26, 2006

Early Detection Surveillance for Avian Influenza: What FWS Field Staff Need to Know

Chapter Directory for DVD:

DVD Chapter

Participant Guide Page

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Workshop Objectives

At the end of this workshop, you should be able to:

1. Explain how an influenza virus affects healthy cells, how it is transmitted and how a pandemic occurs.
2. Describe how the Highly Pathogenic Asian Avian Influenza Virus H5N1 differs from common influenza viruses, where it originated and its current status.
3. Explain how H5N1 is expected to be spread to North America and its potential impacts to wild birds.
4. Describe what the Fish and Wildlife Service (FWS) is doing to properly prepare for and respond to the arrival of H5N1 in North America.
5. Explain why it is important to conduct early detection surveillance for H5N1.
6. List the ways that FWS field staff may be involved in early detection surveillance.
7. List the steps that each field site should take to prepare based on their anticipated involvement.
8. List the proper Personal Protective Equipment (PPE) to be worn when collecting samples during early detection surveillance.
9. Describe how to select and properly prepare a specimen for shipping to a diagnostic laboratory.
10. Describe the steps taken at a diagnostic lab to determine the mortality cause and how results will be reported by a diagnostic lab and what actions should be taken while waiting for those results.
11. List the elements that should be contained within an avian influenza response plan.

What is the HPAI H5N1 Virus?**What are the Possible Public Health Impacts?**What are the influenza virus types?

- Type A
Primarily infects birds, may infect people, pigs, horses and marine mammals
- Type B
Infects only humans
- Type C
Infects only humans and results in very mild disease

Further Type Variations

- Designated low or highly pathogenic
 - Potential to kill domestic poultry
 - Doesn't refer to infectivity to humans or wild birds
- Strains based on surface proteins

Surface Proteins - see page 4

- Antigenic glycoproteins
- Hemagglutinin (H), neuraminidase (N)
- 16 different H and 9 N
- Make up 144 subtypes

Avian Influenza Virus of Concern - see pages 5-7

- Type A with H5N1 surface proteins and is highly pathogenic
- First appeared in 1997
- Caused outbreaks in SE Asia / China
- Now expanded to Middle East, Europe and Africa

Genetic Drift

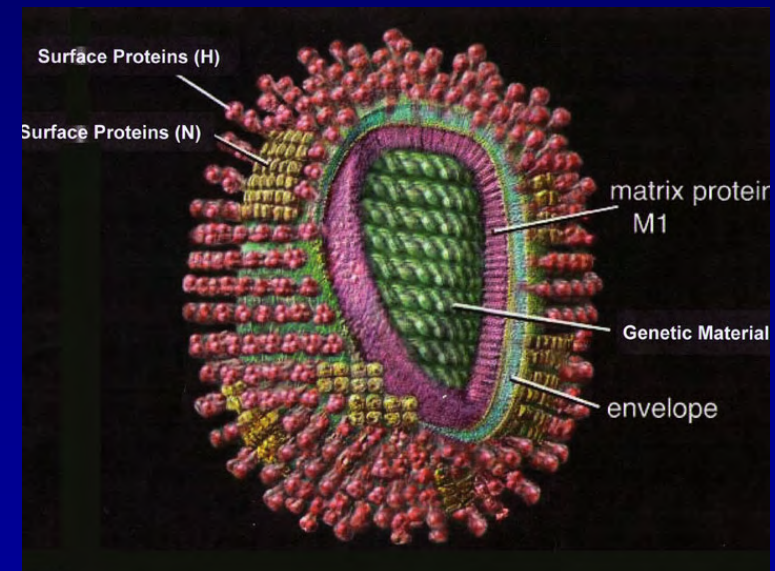
- Gradual process of change as replication of virus introduces slight errors in the genetic code
- Reason new vaccines are needed each year

Genetic Shift

- Significant shift over a short period of time
- Creates a whole new virus
- No immunity
- If the new virus sustains person to person contact, then you can have a pandemic

Surface Proteins

- Differentiated by two surface proteins
 - Antigenic glycoproteins
 - Hemagglutinin (H), neuraminidase (N)
 - 16 different H and 9 N
 - make up 144 subtypes



AI Virus of Concern

Type A with H5N1 surface proteins and is highly pathogenic

H = Highly

P = Pathogenic

A = Avian

I = Influenza virus

H= hemagglutinin

5 = subtype

N = neuraminidase

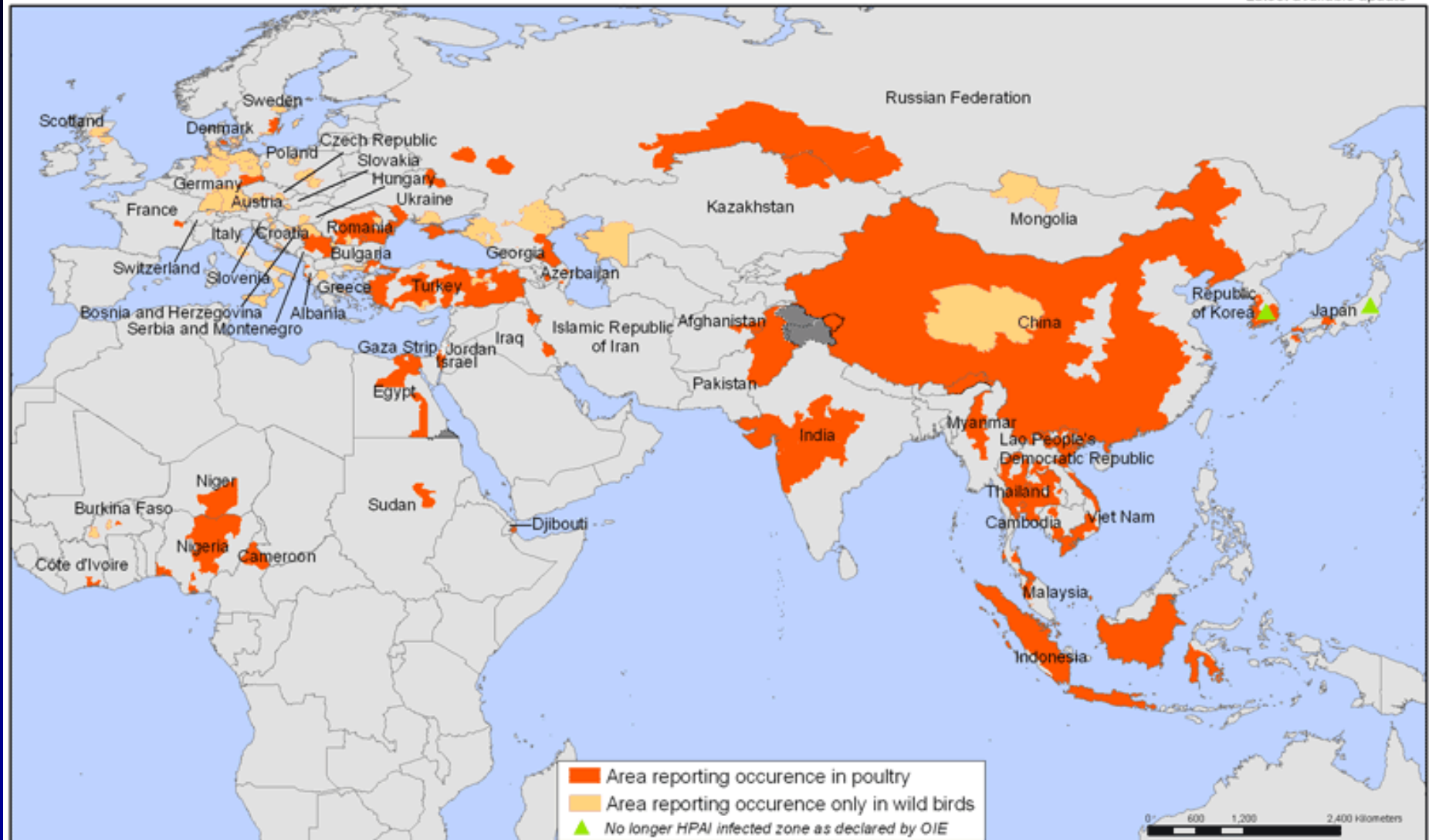
1 = subtype

AI Virus of Concern (cont.)

- First appeared in 1997
- Caused outbreaks in SE Asia / China
- Now expanded to Middle East, Europe and Africa

Areas reporting confirmed occurrence of H5N1 avian influenza in poultry and wild birds since 2003

Status as of 26 June 2006
Latest available update



World Health Organization

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The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Organisation for Animal Health (OIE) and national governments

Map Production: Public Health Mapping and GIS

Communicable Diseases (CDS) World Health Organization

What is the HPAI H5N1 Virus?**What are the Possible Public Health Impacts?**

What is a pandemic? - see page 9

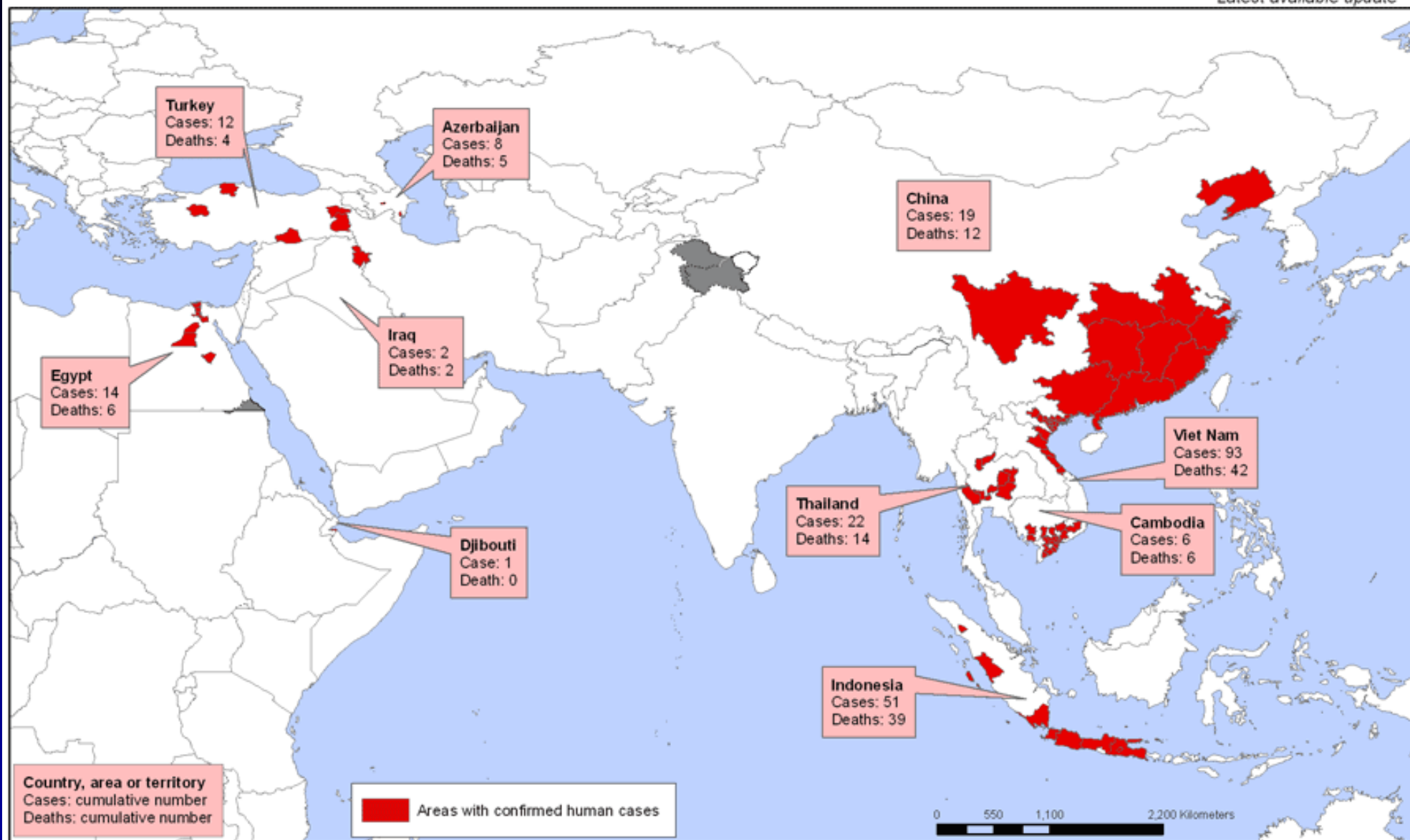
- An epidemic (disease outbreak) among humans that spreads beyond
- a region or continent
- World wide outbreak
- 1918 Spanish Flu 50M World
- 1957-58 Asian Flu 70K US
- 1968-69 Hong Kong Flu 34K US

What is the current status of HPAI H5N1?

- Ability to infect humans (130 deaths)
- No sustained human to human transmission yet
- Remains disease of domestic birds and wildlife

Affected areas with confirmed human cases of H5N1 avian influenza since 2003

Status as of 20 June 2006
Latest available update



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: WHO / Map Production: Public Health Mapping and GIS
Communicable Diseases (CDS) World Health Organization

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What are the Possible Impacts of HPAI H5N1 on Wildlife?

Notes

Avian Influenza in Waterbirds

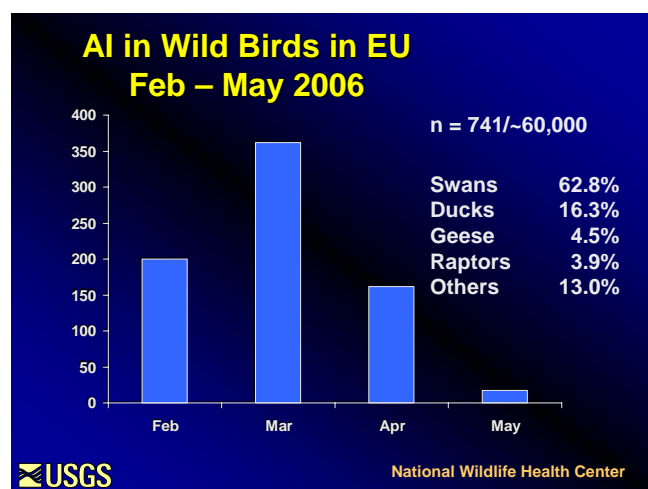
- Waterbirds are natural reservoirs
- All 16 H and 9 N combinations occur
- AI endemic to waterbirds is low path
- Subclinical to mild disease
- Respiratory and digestive tracts
- Fecal-oral transmission

Avian Influenza in Waterfowl - see page 11

- Seasonality
 - highest % in mid-late summer
 - can increase during fall migration
 - generally decreases late fall & winter
- Age
 - Juveniles
- Location
 - Staging
 - Wintering

Avian Influenza in Shorebirds - see pages 12-19

- Seasonality
 - May & September
 - Migration-related
- Location
 - Staging areas
 - Wintering sites



Avian Influenza in Waterfowl

- Seasonality
 - highest % in mid-late summer
 - can increase during fall migration
 - generally decreases late fall & winter
 - !! some spp 10-25% in late winter
- Age
 - Juveniles
- Location
 - Staging
 - Wintering

Qinghai Nature Reserve

May-June 2005

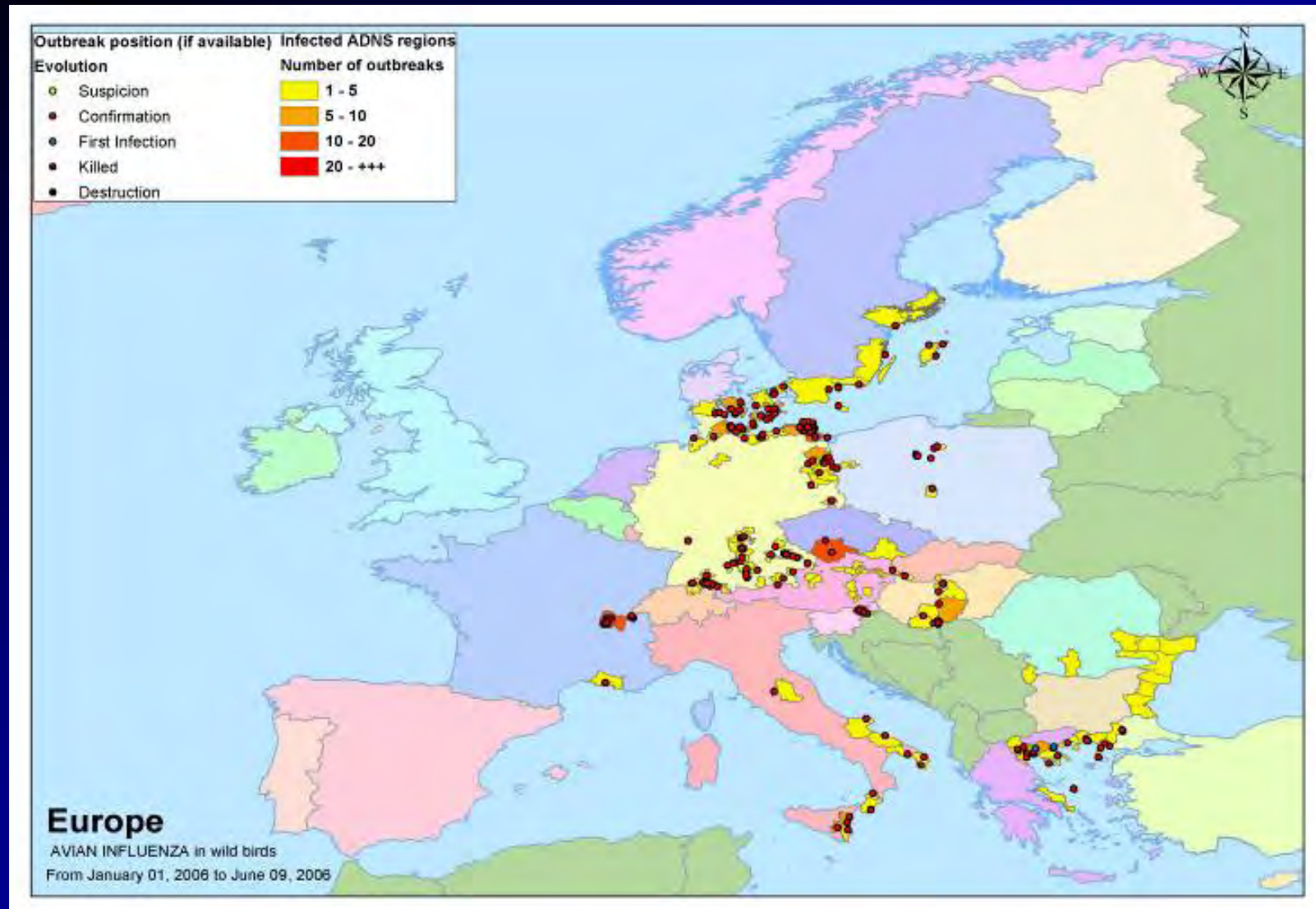
• Bar-headed geese	3282
• Grtr Black- & Brown-headed Gulls	1499
• Great Cormorants	1302
• Ruddy Shelducks	145

H Chen, 2006. OIE-Rome



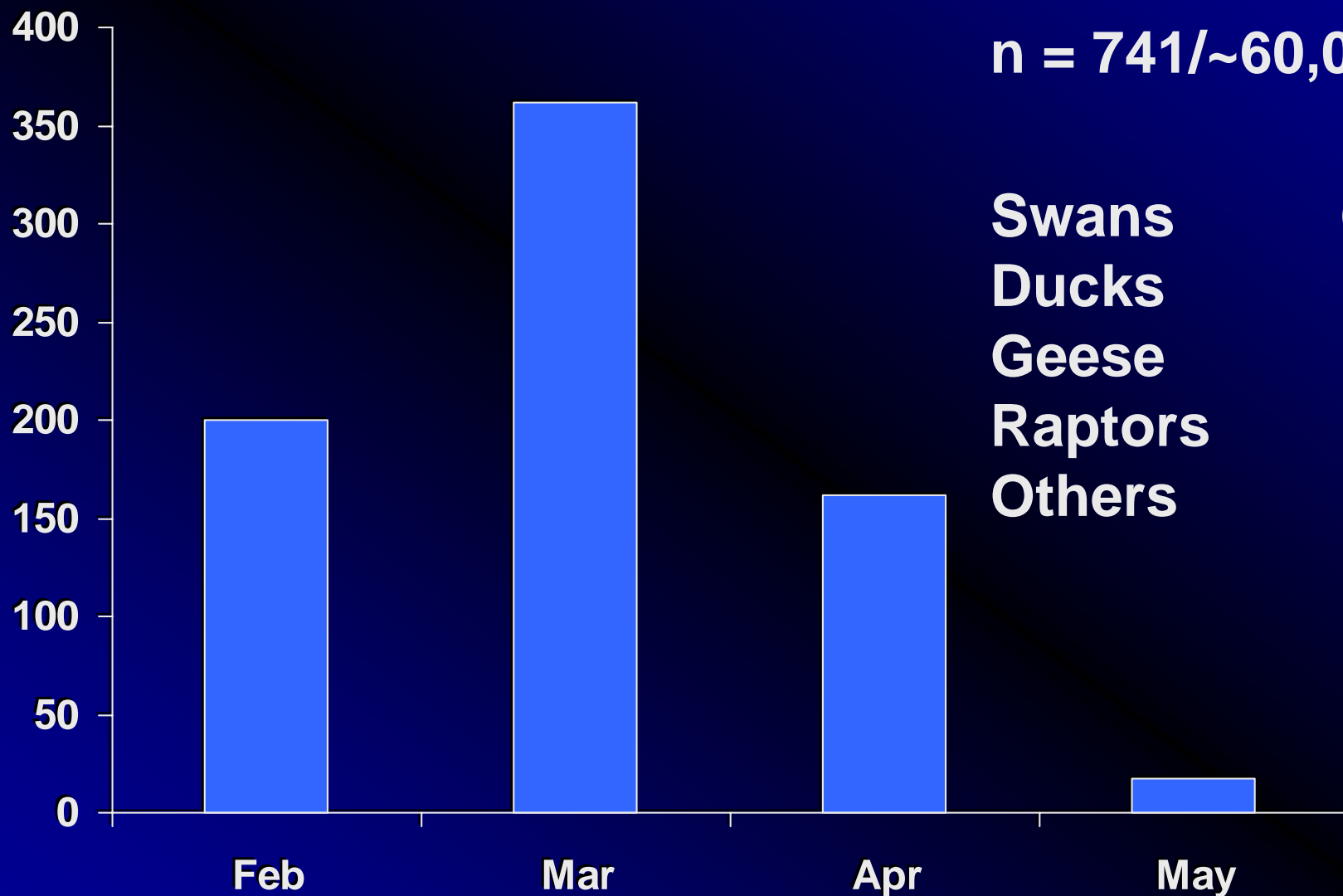
**Commercial management of
bar-headed geese**
Chickens fed to fish in lake

AI in Wild Birds in EU, 2006

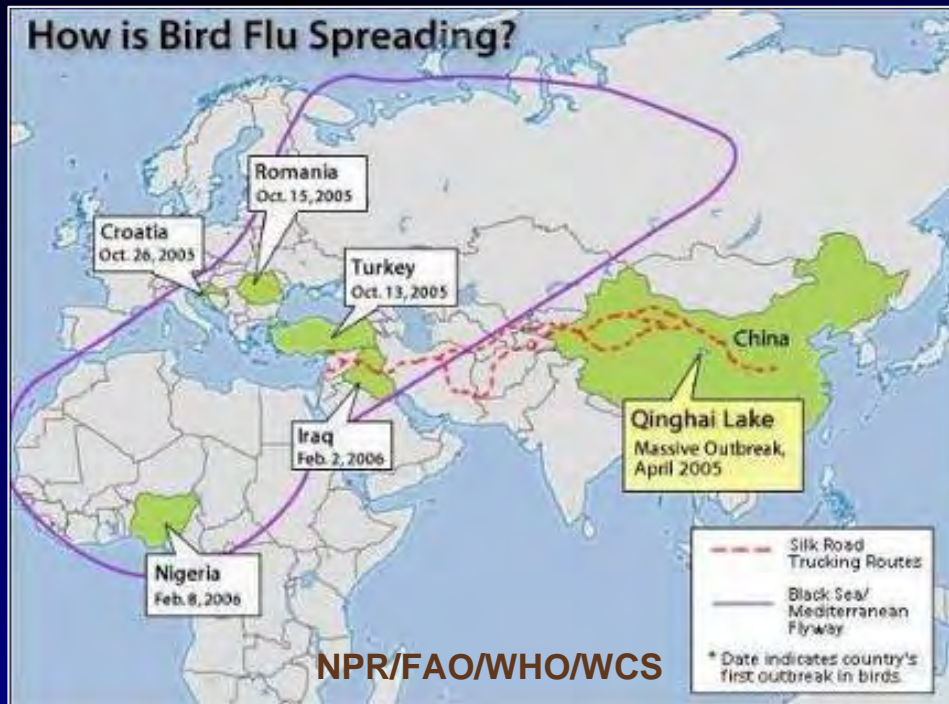


AI in Wild Birds in EU

Feb – May 2006



Nigeria and Flyways?



www.fao.org/

- Outbreaks in poultry only
- Timing of outbreak not consistent with migration patterns
- Discovery of illegal shipments of poultry

North America: Intercontinental Migrations

Atlantic Flyway

- **9 species have European contact**
- **> 5 spp move between Canada & Greenland**

Pacific Flyway

- **146 spp covered in Russia/Japan/US Treaty**
- **32 spp migrate between Asia & AK**

Light-colored Brant Migration



Laurie Campbell

- Brant from UK may mix with brant that winter on NA East Coast

Black Brant

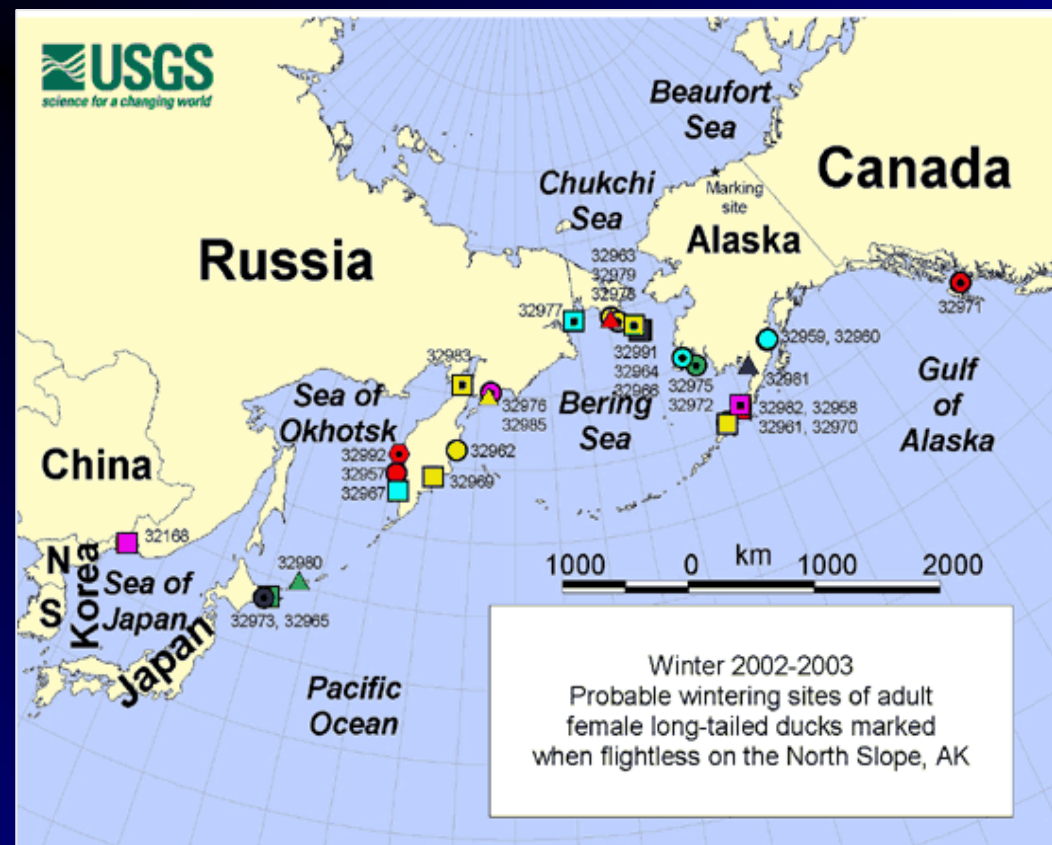
- Black brant banded at
◆ Izembek NWR winter in Japan
- Brant banded at Chevok, AK;
band returns from Omeizaki
Peninsula, Japan (Univ. AK)



USGS-Recent Discoveries

- Long-tailed ducks marked at Point Thompson, North Slope, tracked by satellite telemetry 08/2002 - 1/2003
- Birds wintered along Eastern Pacific rim

USGS Alaska Science Center



What Planning Has Been Done for Early Detection Surveillance?

Notes

National Planning

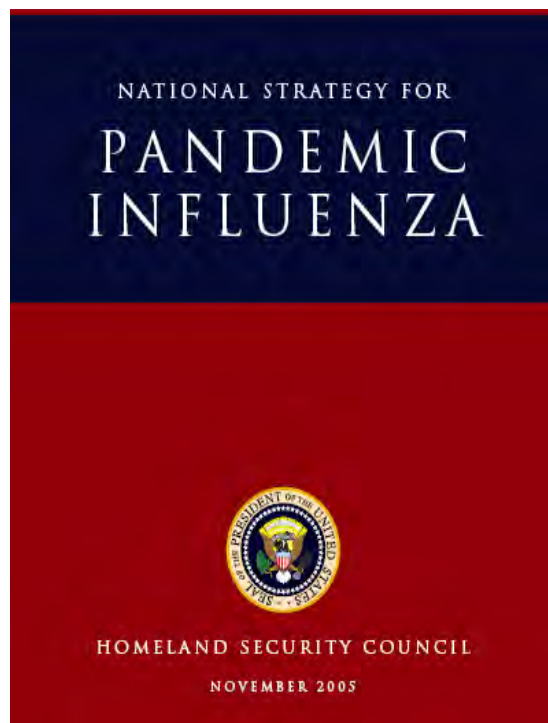
- Threat to domestic poultry industry and possible threat to wild birds
- Threat of change to sustained human to human transmission

National Pandemic Influenza Plan

- Preparedness and communication
- Surveillance and detection
- Response and containment

U.S. Interagency Strategic Plan for Early Detection of H5N1 HPAI - see pages 21-22

- Unified national system
- Prioritized geographical flyways
- Prioritized species
- Recognized flyway councils as mechanism for coordinating surveillance



U.S. Interagency Strategic Plan for Early Detection of H5N1 HPAI

- U.S. Department of Interior
- U.S. Department of Agriculture
- U.S. Department of Health & Human Services
- Association of Fish & Wildlife
- Alaska Department of Fish & Game

U.S. Interagency Strategic Plan for Early Detection of H5N1 HPAI

- Unified national system
- Prioritized geographical flyways
- Prioritized species
- Recognized flyway councils as mechanism for coordinating surveillance

What Sampling Strategies Will Be Used? - see page 24**Notes****Live Wild Birds**

- Focused on priority species
- Capture
- Collection of cloacal swabs

Hunter Harvested Birds

- Focused on priority species
- Swabbing at check stations, boat ramps and other hunter locations
- Subsistence harvested birds currently being swabbed in Alaska

Investigation of Morbidity and Mortality Events

- Systematic investigation is critical
- Greater vigilance than “pre-H5N1”
- Individual cases may be significant

Sentinel Species

- Using resident flocks or placing susceptible species in strategic locations and monitoring health

Environmental Monitoring

- Water
- Soil
- Feces

Current Status of Early Detection Surveillance? - see page 25

- Ongoing coordination with Canada and Mexico
- Alaska has begun EDS activities
- Pacific Flyway completed plan. State level plans will be implemented in July
- Other flyways doing baseline efforts and completing plans in next few weeks

Sampling Strategies

- Live wild birds
- Hunter harvested birds
- Investigation of morbidity and mortality events
- Sentinel species
- Environmental monitoring

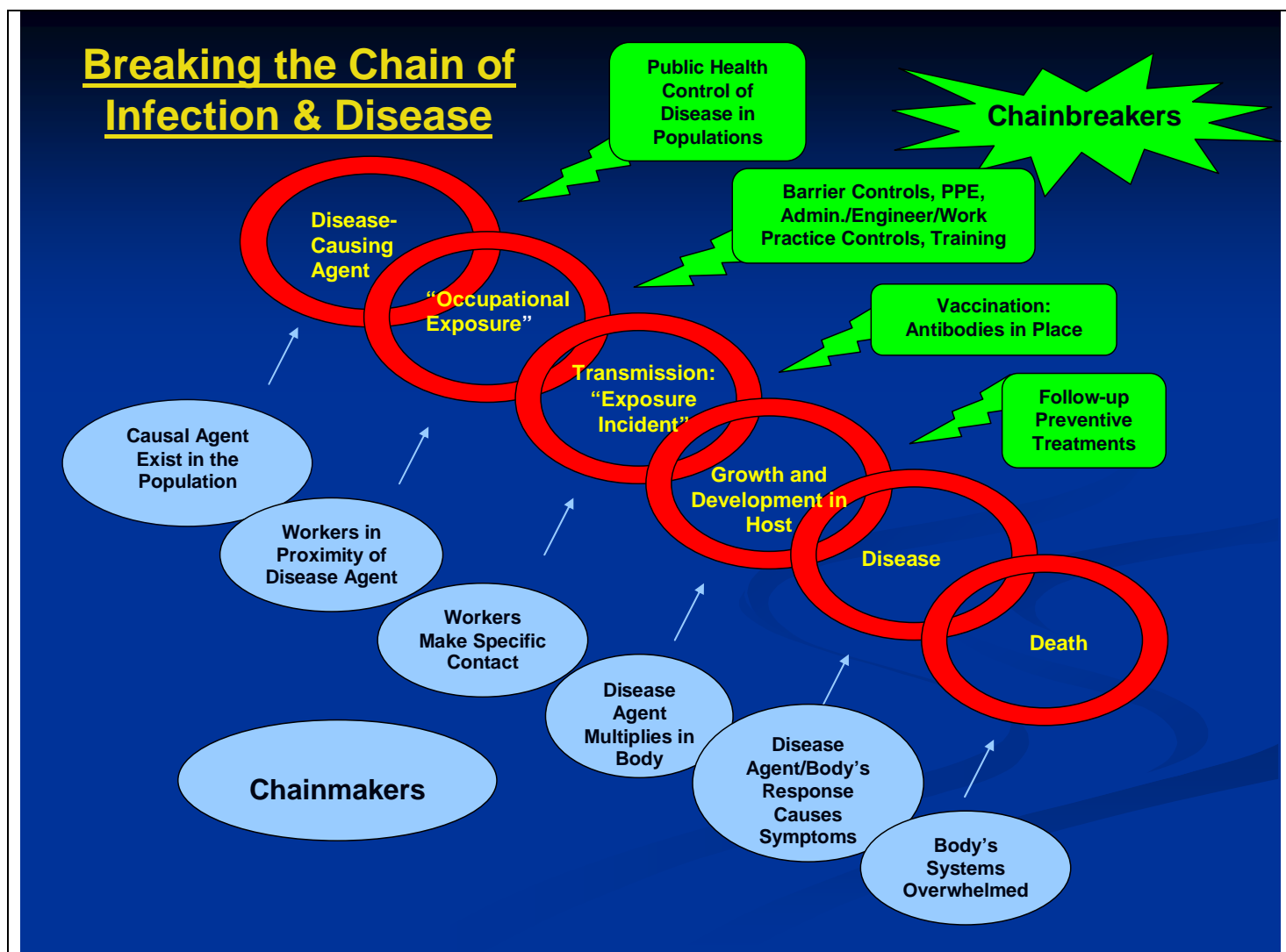
Targeted Surveillance Efforts



How Might FWS Field Staff Be Engaged?**Notes**

- Field station activities will depend on flyway and state plans
- Live bird and hunter harvested sampling are most likely
- May involve FWS personnel across programs
- Plan to contribute to enhanced mortality investigations

What Personal Protective Equipment (PPE) is Appropriate for Surveillance Activities?



What Personal Protective Equipment (PPE) is Appropriate for Surveillance Activities?

Notes

Annually, in the United States -

- 5%-20% of the population gets the flu
- More than 200,000 people are hospitalized from flu complications
- About 36,000 people die from flu

Exposure and Transmission: Contact and Intake

- Direct contact with infected birds
- Contact with feces or feces-contaminated surfaces or water
- Inhalation of infectious aerosols
- Oral ingestion
- Direct intranasal or conjunctival inoculation

Prevention Toolbox - see page 34

- Sanitation and hygiene
- Education
- Engineering controls
- Work practice controls
- Personal protective equipment

PPE – Barrier Protection

- Hand and Foot Protection
 - Gloves
 - Boots or Boot Covers
- Eye Protection
 - Glasses
 - Goggles
- Respiratory Protection
 - N-95
 - PAPR
- Splash Protection – Coveralls – Gown
 - Apron – Face shield

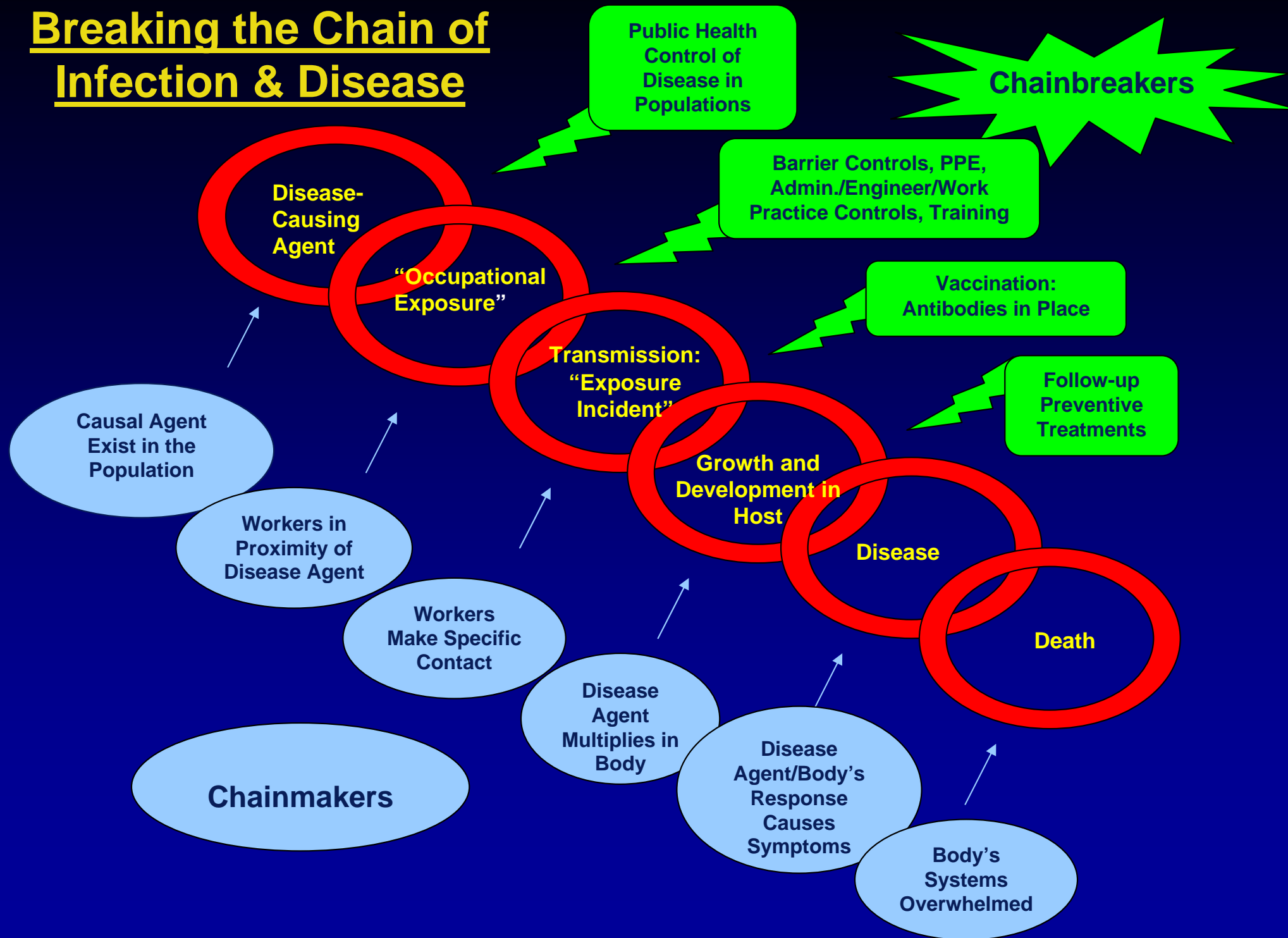


See Page 29-35 for more on PPE and Prevention

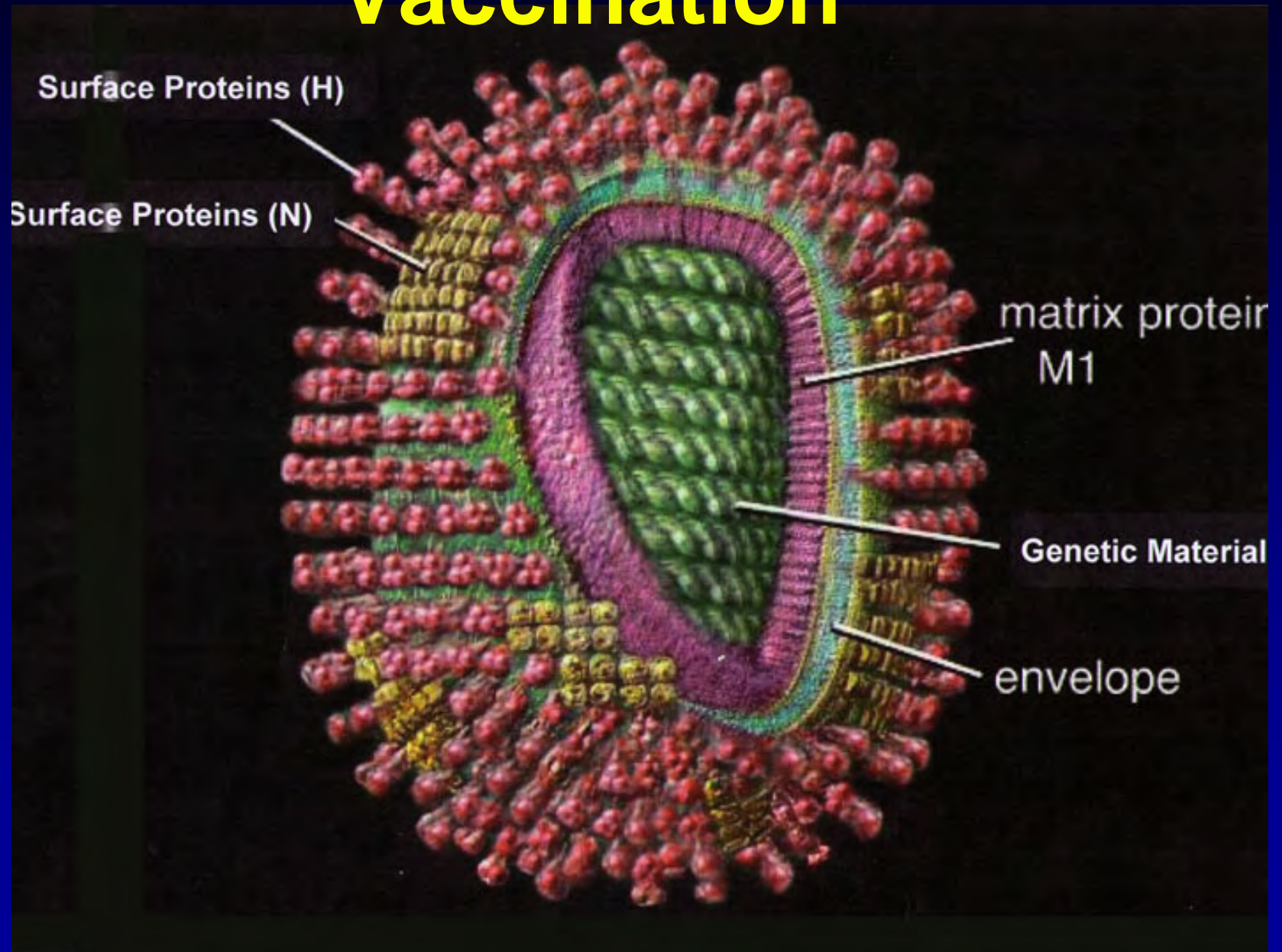
Respiratory Protection



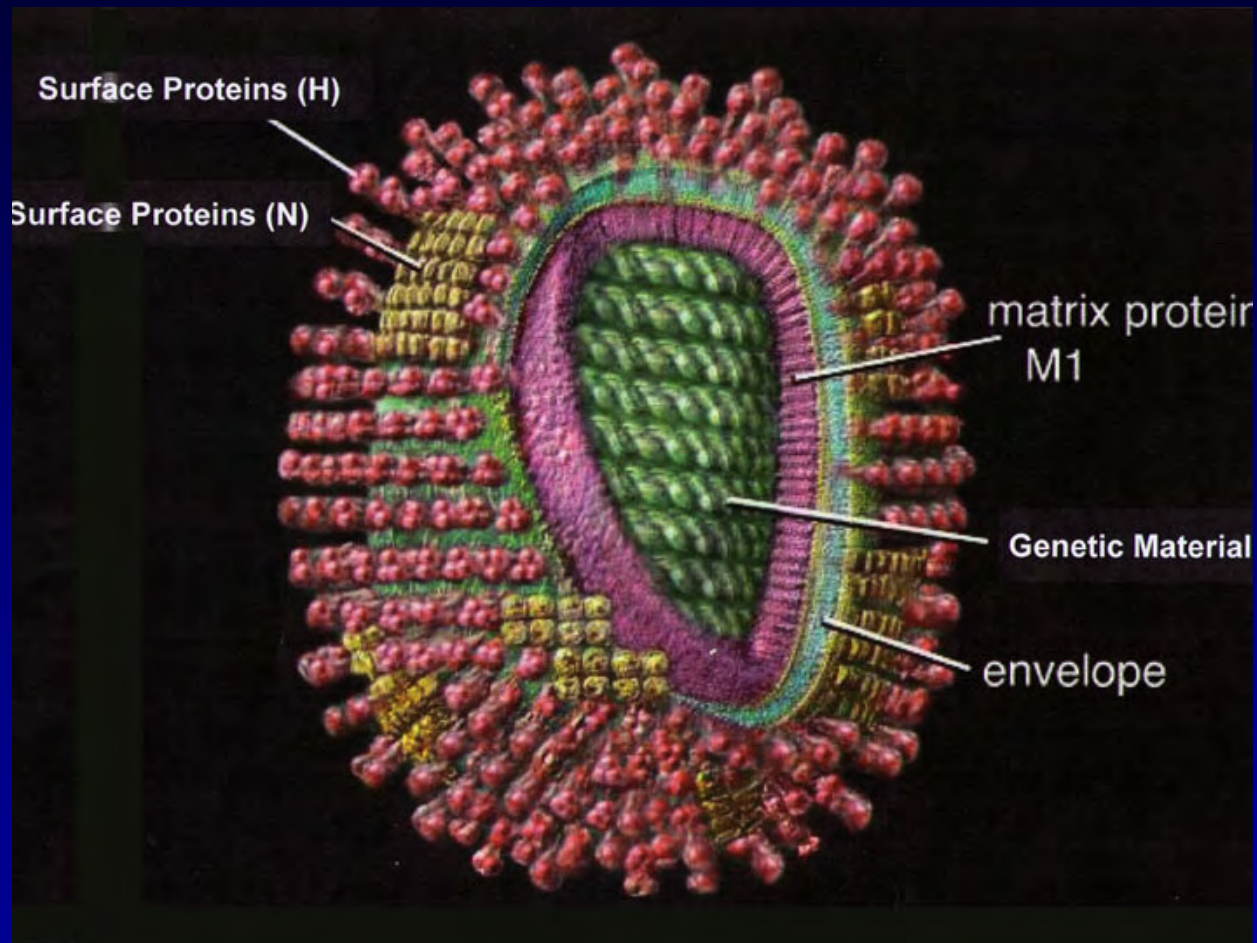
Breaking the Chain of Infection & Disease



Vaccination



Antiviral Drugs



Prophylaxis or Treatment

Self Monitoring

Influenza symptoms

- Fever
- Aches
- Cough
- Runny nose
- Sore throat
- 1-2 weeks

Review: Our Prevention Toolbox

- Sanitation and Hygiene
- Education
- Barriers and Isolation
 - Engineering Controls
 - Work Practice Controls
 - Personal Protective Equipment
- Vaccines
- Antiviral Drugs (prophylaxis or treatment)
- Post-exposure Follow-up

At Your Site...

- What activities and tasks are you involved in that might require risk of exposure? What actions would be appropriate to mitigate the risks?

What Procedures Should We Follow for To Swab Birds? - see pages 37-45

Notes

Per Collection Event

- Affiliation
- Contact name
- Date
- Location (UTM or lat/long)
- Strategy (LBS, HHB, mortality investigation)

Per Bird Sample

- Species
- Band # (if applicable)
- Sex
- Age
- NWHC case #
- NWHC Accession #
- Comments

Sampling Materials

- Transport Media:
 - KEEP FROZEN until use
 - KEEP ON ICE in the field
 - 7-DAY thawed shelf life
- Dacron swabs: Do not get wet!

Get Cells, Not Feces

- Identify cloaca
- Insert dacron portion of swab
- Twist to obtain cells from wall of cloaca

Sample Submission

- Insert swab into vial
- Raise about ¼", break shaft
- Leave swab in vial
- Leave swab in vial, CAP the tightly & KEEP ON ICE while in the field
- Store vials in liquid N2 vapor shipper, on dry ice, or in -70 - -80 C freezer
- Ship in liquid N2 vapor shipper or on dry ice

National Pandemic Influenza Strategy

**Preparedness and
Communication**

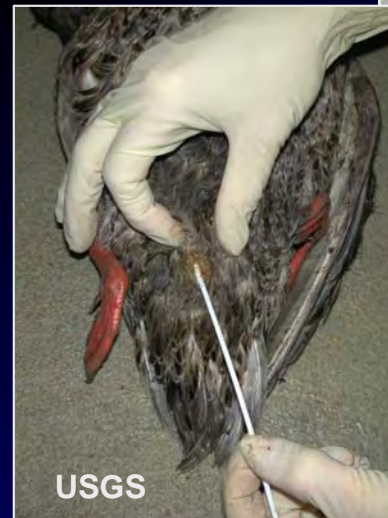
Surveillance and Detection

**2006 Joint Wild Bird Surveillance:
DOI (USGS, USFWS), USDA**

**Response and
Containment**

Live Bird and Hunter Harvest

- Information Needs
- Sampling
- Shipping
- HEDDS



Field Data – NWHC

How? Field Notes, Data Sheet, Excel

- **PER COLLECTION EVENT**

- Affiliation
- Contact name
- Date
- Location (UTM or lat/long)
- Strategy (LBS, HHB, mortality investigation)

- **PER BIRD/SAMPLE**

- Species
- Band # (if applicable)
- Sex
- Age
- NWHC case #
- NWHC Accession #
- Comments

Live Bird/Hunter Harvest

PPE



Sampling Materials



Transport Media:

KEEP FROZEN until use
KEEP ON ICE in the field

7-DAY thawed shelf life



Dacron swabs:
Do not get wet!

CELLS, not Feces!

Identify cloaca



Insert dacron portion
of swab



Twist to obtain cells
from wall of cloaca



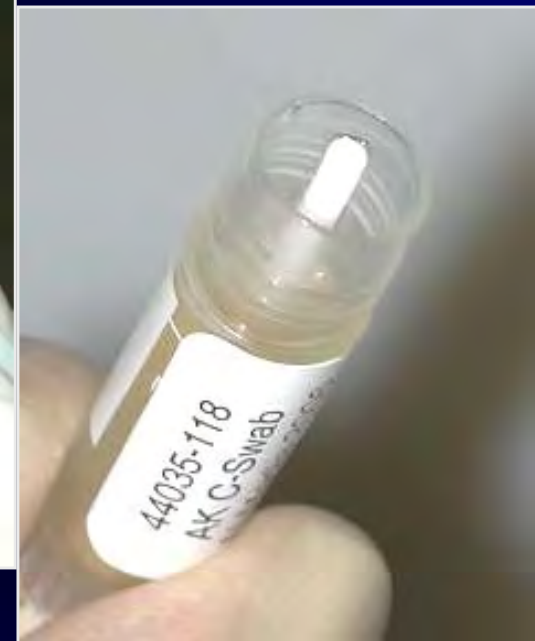
**Insert swab
into vial**



**Raise about 1/4",
break shaft**



**Leave swab
in vial**



**Leave swab in vial,
CAP the tightly &
KEEP ON ICE while
in the field.**

**Store vials in liquid N₂
vapor shipper, on dry
ice, or in -70 - -80 C
freezer.**

**Ship in liquid N₂ vapor
shipper or on dry ice.**



Testing Swab Samples

- **Molecular testing – PCR**
 - Matrix protein – AI
 - Hemagglutinin – H5/H7
- **If both positive, to NVSL**
 - Repeat matrix and H5/H7
 - Test for N1



- ▶ Main Menu
- ▶ Search Data
- ▶ Browse Data
- ▶ Edit Data
- ▶ Log off
- ▶ Send Feedback
- ▶ Reports/Maps
- ▶ Shipment Tracking

Main Menu

Data Edit

Data Verification

Search Data

Browse Data

Reports & Maps

Shipment Tracking

My User Information

Log off

Bird Information:

ID Type:

ID Value:

Species:

Sex:

Age Class:

Collection Information

What was the reason for collection?

Date of collection:

Location Information

Coordinate System:

Latitude:

Longitude:

State collected:

County collected:

Place Name

Sample Information

Sample ID

Select sample type:

Date Collected:

Diagnostic Lab:

Date Submitted to lab:

wildlivedisease.nhii.gov/ai

What Procedures Should Be Followed for Collecting Specimens in a Mortality Event?

Notes

Preparing equipment in advance of an event

Items that can be packed in an open bin

Rubber Boots
Stiff brush for cleaning
Tap water
Household Bleach
1 cup measuring cup
Plastic pan or small bin for decontamination

Items that need to be kept dry (in cooler)

Plastic bags (small, medium, large)
Large garbage bags
Disposable nitrile gloves
Disposable Masks (N-95 type)
Coveralls (washable or disposable kind)
Labels
Permanent markers (Sharpies)
Flagging
Hand washing solution
Camera
Site history forms and field notebook
Handheld GPS unit
Binoculars

Once you reach the site of a mortality event

- Let office know where you are going
- Put on personal protective equipment (PPE)

Reconnaissance of Site (“Clean phase”)

- View situation using binoculars, take photos, take GPS reading
- Take field notes – include weather, conditions, habitat, and other observations
- Make sure it's safe to enter

What Procedures Should Be Followed for Collecting Specimens in a Mortality Event?

Notes

Enter site for collection (“Dirty phase”)

- Make sure you have enough equipment first.
- Use nitrile gloves and well-fitting respirator.
- Flag and bag carcasses in place if possible (if collection is being done from land)
- Place tags on leg of each animal rather than labeling bag. Use permanent marker.
- You need to collect enough carcasses sufficient for lab analysis. Either collect all the carcasses at the site and submit those in good condition, or collect 5 to 10 carcasses and submit at least 5 to the lab.
- While returning back through the site, collect the carcasses in a large plastic garbage bag.
- Leave your PPE on until you have put carcasses on ice.
- Change your gloves for placing specimens in cooler.
- Use a cooler to triple bag the carcasses that will be shipped.
- Chill carcasses (transport everything on ice)
- Remaining carcasses can be discarded according to the procedures at your office for disposing potentially hazardous waste.

Disinfection (decontamination) of boots and equipment

- Into plastic pan or bin mix a 10% bleach solution (About 1 ½ - cup of household bleach to one gallon of tap water)
- Brush off the cleanest item first – move to dirtiest items later (start with the cooler, then move to the extra bags, flagging, boots)
- Important to brush off all soil and vegetation from boots and equipment in order for the disinfectant to do its job.
- Discard the used bleach water in an area away from the pond / wetland in sand or gravel area.
- Use the remaining fresh tap water to rinse the disinfectant off the equipment
- Remove boots and coveralls (turn inside out), gloves, and respirator and place in a plastic bag.
- Wash hands with alcohol-based hand rub if soap and water is not available in the field.
- Back at office, wash hands with hot water and soap and wash coveralls in hot water and detergent.

What Procedures Should Be Followed for Collecting Specimens in a Mortality Event?

Notes

Three layers of protection required to ship

“The Triple Bagging Process for carcasses” [Outer to inner bags]

1. Large bag lining cooler
2. Clean plastic bag over the bagged carcass
3. Carcass in the collection bag (with tag visible inside)

Shipping

- Call lab **before** for their requirements
- Fill out field history form and insert in plastic bag taped inside of cooler lid (include return label if you want your cooler back)
- Triple bag the specimens
- Use plenty of Blue ice coolant and crumpled paper
- Tape the cooler shut and write “diagnostic specimens” on outside of cooler

Video tape done by:

Kathryn Converse, Wildlife Disease Specialist
National Wildlife Health Center
6006 Schroeder Road
Madison, WI 53711
(608) 270-2445

**What Steps Does a Lab Take to Determine
Mortality Causes?**

Notes

BSL-3 Necropsy Suite

Diagnostic Laboratories

Results Reporting

Investigation of Morbidity/Mortality Events

- Enhanced capacity
- Nationwide, Pacific Ocean, Caribbean
- Determine Cause of Death
 - And test for H5N1 HPAI



National Wildlife Health Center



608-270-2400

www.nwhc.usgs.gov



**6006 Schroeder Rd
Madison, WI 53711**

BSL-3 Necropsy Suite



Diagnostic Laboratories



Virus Identification

- **Molecular Detection**

- **PRO**

- Fast
 - Automatable

- **CON**

- Less sensitive (?)
 - Negatives not informative

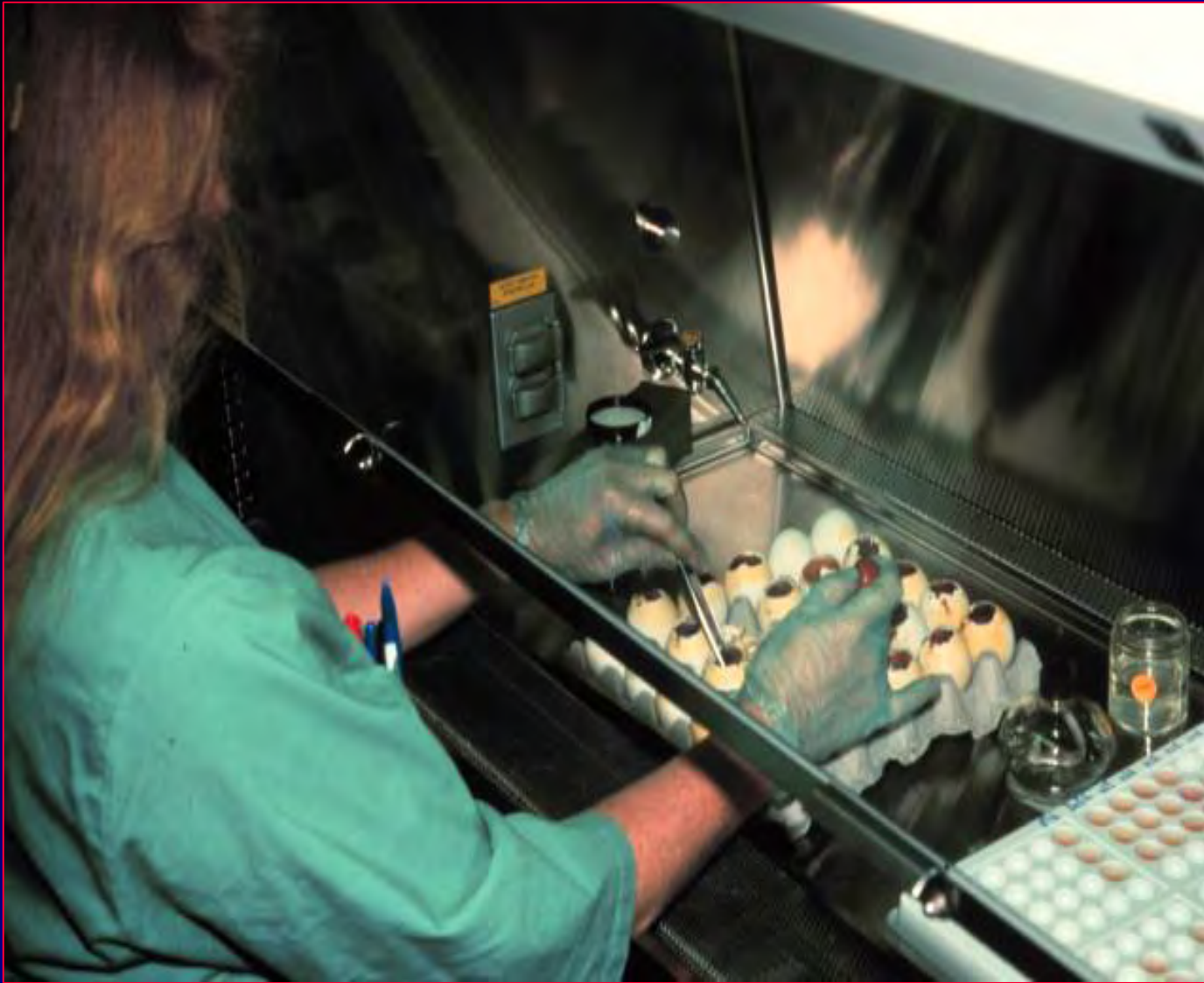
- **Virus Isolation**

- **PRO**

- Gold standard
 - Definitive
 - Isolates for further study

- **CON**

- Labor-intensive, slow



Reporting

- Necropsy findings and diagnostic test submissions relayed by phone or e-mail within 24-36 hrs of necropsy
- Test results relayed when available

Answers May Not Be Available



Resources - USFWS Surveillance Contacts

Region 1 and California/Nevada Operations Office

Brad Bortner
Chief, Migratory Birds
Phone 503-231-6164
Brad_Bortner@fws.gov

Richard Hadley
Assistant Refuge Supervisor
Phone 916-414-6483
Richard_Hadley@fws.gov

Jenny Hoskins
Asst. Avian Influenza Coordinator
Phone 503-231-6164
Jenny_Hoskins@fws.gov

Region 2

– Arizona and New Mexico
Jeff Haskins
Chief, Migratory Birds
Phone 505-248-6639
Jeff_Haskins@fws.gov

-- Texas and Oklahoma
Dave Haukos
Migratory Bird Specialist
Phone 806-742-1983
David_Haukos@fws.gov

Region 3

Steve Wilds
Chief, Migratory Birds
Phone 612-713-5432
Steve_Wilds@fws.gov

Region 4

David Viker
Chief, Migratory Birds
404-679-7188
David_Viker@fws.gov

Region 5

Sherry Morgan
Assistant Regional Director,
Migratory Birds and State Programs
Phone 413-253- 8610
Sherry_Morgan@fws.gov

Region 6

John Cornely
Chief, Migratory Birds
303-236-6284
John_Cornely@fws.gov

Tom Roffe
Chief, Wildlife Health
Phone 406-994-5789,
Thomas_roffe@fws.gov

Region 7

Bob Leedy
Chief, Migratory Birds
Phone 907-786-3446,
Robert_Leedy@fws.gov

Deborah Rocque
Avian Flu Coordinator
Phone 907-786-3389,
Deborah_Rocque@fws.gov

Resources – Web Sites and Online References**Notes**

FWS HPAI home page <http://www.fws.gov/home/avianflu/>

U.S. Geological Survey (USGS) National Wildlife Health Center (NWHC), Avian Influenza Site
http://www.nwhc.usgs.gov/disease_information/avian_influenza/index.jsp

U.S. Government avian and pandemic flu information. Managed by the Department of Health and Human Services <http://www.pandemicflu.gov/>

Homeland Security Council's National Strategy for Pandemic Influenza
www.whitehouse.gov/homeland/nspi.pdf

USDA APHIS Avian Influenza Site: Biosecurity for the Birds
<http://www.aphis.usda.gov/vs/birdbiosecurity/hpai.html>

Guidelines for safe handling of wild birds from National Wildlife Health Center
http://www.nwhc.usgs.gov/publications/wildlife_health_bulletins/WHB_05_03.jsp

Department of Interior Site
<http://www.doi.gov/issues/avianflu.html>

Department of Agriculture Site
www.usda.gov/birdflu

Early Detection of HPAI in Alaska; A workshop Jan 18 – 19, 2006
<http://wildlifedisease.nbii.gov/aiworkshop/index.jsp?search=Wild%20birds&pagemode=submit>

An Early Detection System for Highly Pathogenic H5N1 Avian Influenza
U.S. Interagency Strategic Plan
www.doi.gov/issues/birdflu_strategicplan.pdf

What Hunters Should Know About AI - Fact Sheet from Alaska
http://www.avianflu.alaska.gov/PDFs/Avianflu_hunter_notice.pdf

FWS site with useful links and articles
<http://www.fws.gov/migratorybirds/issues/AvianFlu/WBAvianFlu.htm>

Useful links and publications
<http://wildlifedisease.nbii.gov/diseasepublications.jsp?disease=Avian%20Influenza>

FWS Alaska Office of External Affairs
http://alaska.fws.gov/media/avian_influenza/index.htm

National Wildlife Health Center (NWHC) Wildlife Disease Workshop

An offering under NCTC course #CSP3170 (Avian Disease)

August 23-24, 2006 Albuquerque, New Mexico
Sept - Oct 2006 , Texas or Oklahoma, To Be Determined
October 17, 2006 week, Minneapolis

Instructors

Kathryn Converse, Grace McLaughlin, and Rex Sohn; NWHC Wildlife Disease Specialists

What is the Purpose of the Workshop?

NWHC experts will work with each location to specifically tailor to the experience and needs of the participants and diseases present. Wildlife diseases that can be covered include avian, amphibian and reptile, and mammalian diseases. Additional topics include conducting surveillance for disease, recording an accurate history of events, collecting and preserving samples and carcasses, shipping samples, diagnostic procedures, what to actually do during an outbreak, handling live animals to collect samples, and using protective clothing to protect people or other animals from disease.

The workshop can include a day on highly pathogenic avian influenza (HPAI), H5N1, an emerging concern for FWS field personnel. Participants will have hands on training in whatever their involvement may be in avian influenza early detection surveillance and field procedures, including responding to die-offs, swabbing, and other types of live bird surveillance.

What are the course objectives?

Define the basic concepts of wildlife disease surveillance and reporting.

Review major diseases of wildlife and be able to describe the diseases typically found in your area.

Develop and organize an informed response to wildlife mortality including sample collection and shipment.

List the proper personal protection and biosecurity needed during a disease response.

Who Should Participate?

The intended audience is FWS field personnel, including refuge biologists, migratory bird program biologists, contaminants specialists and others who may be involved in the national surveillance and/or response to HPAI. Others may benefit from this training in terms of a general awareness of the responsibilities and techniques that the FWS is using.

How Do I Register to Participate?

Additional information and online registration for DOI employees is available at:

<https://doilearn.doi.gov/> Log on with your username and password. Click on the "Course Catalog" tab on the next screen. In the search box, enter the key word "Avian". Click on the course, "Avian Disease" and scroll down and click "Preview Schedule" at the bottom of desired session. Click "Apply" on next page. Registration Status and specific class logistics will be emailed to you after registration.

For additional information or questions, please contact Cathy Johnson (304-876-7441 / catharine_p_johnson@fws.gov) or Karene Motivans (304-876-7458 / karene_motivans@fws.gov) at NCTC.

Instructors

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Wildlife Disease Specialist, Field Investigation Team
Phone 608.270.2446
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Highly Pathogenic Avian Influenza

What are the potential routes for a highly pathogenic strain of avian influenza to arrive in North America?

Migratory birds usually travel thousands of miles over the same routes in their annual migrations. In the Northern Hemisphere, birds begin moving south during August and September of each year. North American migratory birds that spend the winter in Asia may come into contact with potentially infected domestic or wild birds during the winter months.

In spring, migratory birds will migrate north to their breeding grounds in eastern Russia, Alaska, and Canada. Migratory birds infected with the highly pathogenic avian influenza (HPAI) H5N1 returning from Asia could potentially interact with other North American wild birds as they commingle on the breeding grounds.

Has the HPAI H5N1 virus been detected in the United States?

The HPAI H5N1 virus has not yet been detected in the United States in either wild or domestic birds. Should the HPAI H5N1 virus be detected in the United States, it does not mean the start of a human pandemic.

What is the Service's role in granting permits for research and control activities and in sampling for the virus?

The Service supports state surveillance efforts by ensuring that state wildlife agencies have authority under the Migratory Bird Treaty Act to collect and sample any species of migratory bird.

The Service will be issuing to each state and territorial fish and wildlife agency director a scientific collection permit that will give them the authority to collect and sample wild migratory birds for avian influenza virus.

What if a wild bird infected with HPAI is found on a National Wildlife Refuge?

How we respond will be determined by



USFWS photo by LaYonda Walton

The HPAI H5N1 virus has not yet been detected in the United States in either wild migratory waterfowl or domestic birds.

the facts of the particular situation. Should it be necessary, refuge managers have the authority to close all or part of a refuge when public health and safety is at risk. As with any disease affecting wild birds, the Service and State Fish and Wildlife Agencies will closely monitor the situation with other partners such as the USGS National Wildlife Health Center, the agricultural health community and the public health community.

Should wild birds be culled if they are infected with HPAI?

Neither the World Health Organization, the OIE (international animal health organization) nor wildlife professionals recommend killing wild birds as a viable strategy to stamp out or contain the spread of HPAI. Attempts to shoot or trap wild birds may disperse flocks and spread the virus to new areas.

Who has the responsibility to close migratory bird hunting seasons?

The Fish and Wildlife Service and State fish and wildlife agencies have the legal authority to close the migratory bird

hunting season to protect public health in their jurisdictions. Based on what we currently know about the disease, we do not anticipate closing the upcoming waterfowl season.

Should hunters be concerned about avian influenza?

There is currently no indication that waterfowl or other wild birds hunted in the United States carry HPAI H5N1.

While experts believe the risk to hunters is currently low, scientists cannot guarantee that there is no risk. It is always wise to practice good hygiene when handling or cleaning any wild game.

The USGS National Wildlife Health Center has issued guidance to follow routine precautions when handling wild birds (http://www.nwhc.usgs.gov/publications/wildlife_health_bulletins/WHB_05_03.jsp.) The Center



USFWS photo by John and Karen Hollingsworth

As a general rule, people should observe wildlife, including wild birds, from a distance. This protects people from possible exposure to diseases and minimizes disturbance to the animal.

recommends that people handling wild birds:

- Do not handle birds that are obviously sick or birds found dead.
- Wear rubber or disposable latex gloves while handling and cleaning game, wash hands with soap and water (or with alcohol-based hand products if the hands are not visibly soiled), and thoroughly clean knives, equipment and surfaces that come in contact with game.
- Do not eat, drink, or smoke while handling or cleaning birds.
- Cook all game meat thoroughly (165° F, 74° C) to kill disease organisms and parasites.

Is it safe to feed and/or observe wild birds?

At this time there is no reason to believe that backyard birds are a threat to public health. Highly pathogenic avian influenza has not been detected in North America.

As with handling wild birds, the risk of humans contracting avian influenza from feeding wild birds or visiting wetlands is low. As a general rule, people should observe wildlife, including wild birds, from a distance. This protects people from possible exposure to diseases and minimizes disturbance to the animal.

As always, common-sense safety and hygiene practices are a good idea when

bird watching or handling wild bird feeders or equipment.

As a general rule, the public should observe wildlife—including wild birds—from a distance. This protects you from possible exposure to viruses and minimizes disturbance to the animal.

Avoid touching wildlife. If there is contact with wildlife do not rub eyes, eat, drink, or smoke before washing hands with soap and water.

Use disposable or washable gloves when cleaning or handling backyard feeders, bird baths or other equipment. Wash hands thoroughly after handling.

Contact your state, county, tribal or local natural resource agency if a sick or dead animal is found.

To dispose of a dead bird, pick up the bird with an inverted bag or disposable glove, place the bird in another bag, and dispose of it in the trash. Wash hands with soap and water. Trash receptacles should be secured so that children, pets, wild animals do not have access to them.

Thoroughly washing hands with soap and water (or with alcohol-based hand products if the hands are not visibly soiled) is an effective method for inactivating influenza viruses, including HPAI.

Flu viruses are also inactivated with

many common disinfectants such as detergents, 10 percent household bleach, alcohol or other commercial disinfectants. While the virus is more difficult to inactivate in organic material such as feces or soil, exposure to heat, direct sunlight and drying kill many types of bird diseases.

Stay informed of the changing status of highly pathogenic H5N1 avian influenza and the risk it poses to people. If the disease is detected in North America stay informed of geographic areas where it has been detected and public health recommendations available at pandemicflu.gov.

For additional information on avian influenza pathology, safety guidelines, and efforts to monitor wild birds, visit www.nwhc.usgs.gov/disease_information/avian_influenza/index.jsp

U.S. Fish & Wildlife Service
1 800/344 WILD
<http://www.fws.gov>

May 2006



Highly Pathogenic Avian Influenza

Understanding and Protection

Avian influenza (AI) is a disease caused by a virus that infects domestic poultry and wild birds (primarily geese, ducks and shorebirds). Each year, there is a bird flu season just as there is for humans and, as with people, some forms of the flu are worse than others.

AI strains are divided into two groups based on the pathogenicity of the virus—the ability of the virus to produce disease.

Low Pathogenicity Avian Influenza (LPAI)

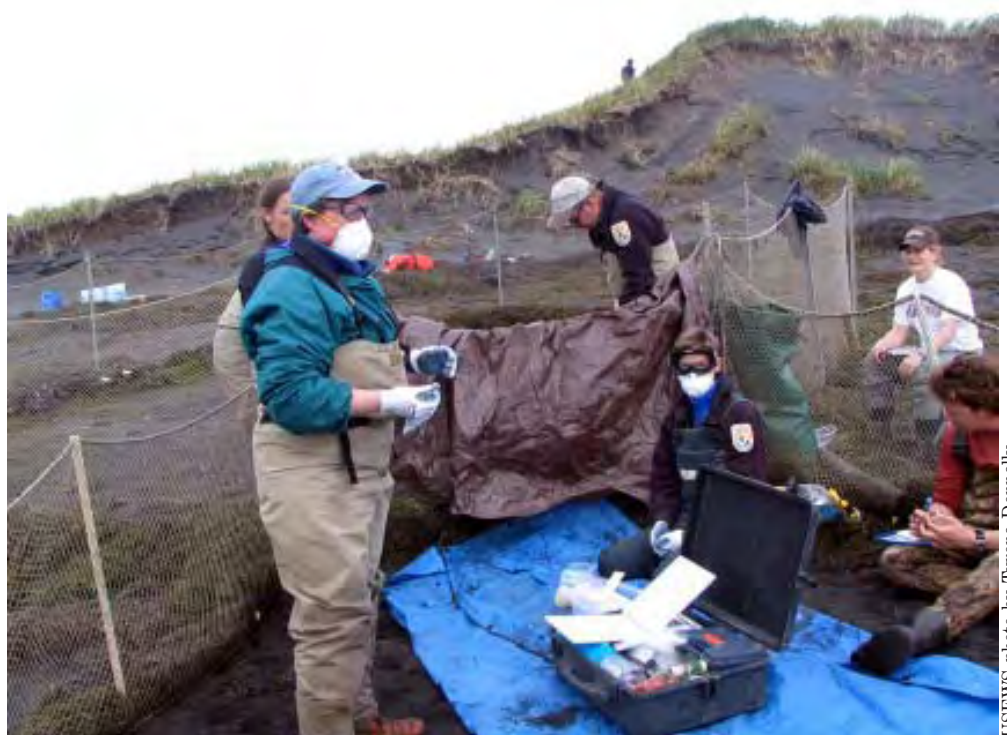
Most AI strains are classified as low pathogenicity and cause few clinical signs in infected birds. LPAI generally does not pose a significant health threat to humans. However, LPAI is monitored because two strains of LPAI—the H5 and H7 strains—can mutate into highly pathogenic forms.

High Pathogenicity Avian Influenza (HPAI)

This type of avian influenza is frequently fatal to birds and easily transmissible between susceptible species. The strain that is currently of concern in Asia, Europe, the Middle East and Africa is the H5N1 HPAI virus.

Currently, the highly pathogenic strain of H5N1 avian influenza is *not* present in the United States. It is possible that the highly pathogenic strain of H5N1 avian influenza will spread to this country, and the U.S. Government is taking steps to prepare for and minimize the potential impact of the occurrence of this disease in the United States.

Most avian influenza viruses have been isolated from wild waterfowl (ducks, geese, and swans) shorebirds (wading birds), gulls, and terns. With rare exception, the thousands of flu isolates found in wild birds have been low pathogenic avian influenza and have rarely caused signs of illness.



USFWS photo by Tyrone Donnelly

The U.S. Fish and Wildlife Service is part of a major governmental effort to monitor wild migratory birds in the United States and to test statistically significant samples of populations of various migratory bird species for the early detection of highly pathogenic avian influenza.

There are a number of ways that highly pathogenic H5N1 could potentially reach the United States—wild bird migration, illegal smuggling of birds or poultry, travel by infected people or people traveling with virus-contaminated articles from regions where H5N1 already exists.

Monitoring Bird Health in the U.S.

The U.S. Department of the Interior and U.S. Department of Agriculture are part of a major interagency effort to monitor wild migratory birds in the United States and to test statistically significant samples of populations of various migratory bird species for the early detection of highly pathogenic avian influenza.

USDA and Interior's agencies, including the U.S. Geological Survey (USGS) and the U.S. Fish and Wildlife Service, have been working for the past several months with State of Alaska biologists to strategically sample live birds, hunter-killed birds, sentinel flocks (healthy domestic birds placed in an area where wild birds congregate and monitored to see if they get the virus) and the environment used by these populations for highly pathogenic H5N1 avian influenza in Alaska. The Interagency Strategic Plan for monitoring wild birds focuses on Alaska because it is a flyway crossroads for migratory birds.

Testing also is being carried out in the Pacific Islands, elsewhere in the Pacific flyway and in other migratory bird



USFWS photo by John and Karen Hollingsworth

The Service will continue to monitor birds imported into the country for signs of disease, including the highly pathogenic strain of H5N1 avian influenza.

flyways in cooperation with state and local agencies. This enhanced monitoring program is designed to provide an early warning to the agriculture, public health, and wildlife communities should migratory birds be found to carry the highly pathogenic H5N1 virus.

Working together, Interior agencies, USDA and state cooperators plan to collect 75,000 to 100,000 samples from wild birds in 2006. Those samples will be tested at the USGS National Wildlife Health Center in Madison, Wisconsin and other National Animal Health Laboratory Network facilities across the country. Suspected findings of highly pathogenic avian influenza will then be sent to the USDA testing center in Ames, Iowa for confirmation.

The Fish and Wildlife Service also works with U.S. Customs and Border Protection and USDA's APHIS at major U.S. air and seaports to inspect, examine and regulate wild birds imported for the pet trade, research and other purposes. Interior land management agencies, including the National Park Service, Fish and Wildlife Service, Bureau of Land Management, Bureau of Indian Affairs and Bureau of Reclamation, are educating their employees and working with stakeholder and support groups, and preparing

protocols to protect visitors and employees on public lands. Many of these lands provide nesting, migration and wintering habitat for waterfowl and other migratory birds.

Bird import restrictions

As a primary safeguard, USDA maintains trade restrictions on the importation of poultry and poultry products from all affected countries. No birds can be imported from a country found to have the highly pathogenic H5N1 strain avian influenza in the commercial poultry population. In addition, all imported live birds must be quarantined for 30 days at a USDA facility and tested for avian influenza before entering the U.S. This requirement also covers returning U.S.-origin pet birds. The U.S. Fish and Wildlife Service works with USDA to communicate these trade restrictions to the pet bird trade community and incorporates them into decisions on permits it issues for wild bird trade. Additionally, USDA has increased its monitoring of domestic commercial markets for illegally smuggled poultry and poultry products.

Guidance for handling wildlife

The USGS National Wildlife Health Center has issued guidance to follow

routine precautions when handling wild birds. The Center recommends that people handling wild birds:

- Do not handle birds that are obviously sick or birds found dead.
- Wear rubber or disposable latex gloves while handling and cleaning game, wash hands with soap and water (or with alcohol-based hand products if the hands are not visibly soiled), and thoroughly clean knives, equipment and surfaces that come in contact with game.
- Do not eat, drink, or smoke while handling or cleaning birds.
- Cook all game meat thoroughly (155 to 165 degrees) to kill disease organisms and parasites.

Additional Information

For more information on avian influenza, including information on public health and food safety, visit the following Web sites:

- <http://www.usda.gov/birdflu>
- http://www.nwhc.usgs.gov/research/avian_influenza/avian_influenza.html
- <http://www.pandemicflu.gov>

U.S. Fish & Wildlife Service
1 800/344 WILD
<http://www.fws.gov>

May 2006

NWHC Protocol for the collection, storage, and shipment of cloacal swab samples (v.02/09/06)
Coordinate with NWHC before sampling begins: Chris Franson (608-270-2444) for live bird surveillance; Bob Dusek (608-270-2403) for hunter/subsistence harvest

Background information

Virus transport media is prepared at NWHC and 1.5cc is dispensed into 2.0cc cryovials pre-labeled with NWHC case and accession numbers. Cryovials are shipped on dry ice and can be stored at standard freezer temp (-20C) for the duration of the field season. Once thawed, virus transport media is good for 7 days refrigerated at 4C. Unused media vials also may be refrozen twice if needed. As samples are collected, vials can be kept on ice or blue ice packs during the day's work (use plenty of blue ice packs and keep the vials under them in the cooler), but should be transferred to liquid nitrogen vapor shippers at the end of the day. After returning from the field, vials can be transferred to ultra-low freezers (-80C) or shipped to NWHC (see below), but should not be stored at standard freezer temperature (-20C). Note any exceptions to ultra-cold storage on packing list and when entering field data.

Cloacal swab procedure

1. Thaw appropriate number of vials of media at refrigerator temperature (4 °C) or on ice and keep chilled with wet/blue ice packs in a cooler during the day of collection.
2. Unwrap a Dacron swab from the stem-end of the packaging (store swabs so they do not get wet), remove swab and insert the entire head of the swab into the cloaca. Use gentle pressure and in a circular motion, swab the inside circumference of the cloaca two or three times.
3. Shake off large pieces of feces before inserting the swab into the vial. With the swab in the media, rotate the stem of the swab between fingers vigorously. Lift the swab about ¼" from the bottom of the vial and bend the stem over the edge of the vial to break off the stem (plastic stems) or cut the stem with scissors (metal stems) so that the swab remains in the vial and the cap can be screwed tight. The entire swab end and a portion of the stem will be left in the tube. Scissors should be wiped with alcohol each time they are used to cut a stem.
4. Write 4-letter species code on vial with fine-tip Sharpie. Keep tubes on ice or ice packs and out of direct sunlight in cooler for transport to camp. Transfer tubes to nitrogen dry shipper.



Shipping to NWHC

Ship samples as "Diagnostic Specimens" (check current regulations) on dry ice (preferred) or blue ice packs (equal volume of ice packs and samples should keep them frozen overnight) via overnight courier (FEDEX preferred). Vials should be placed in chipboard cryovial boxes enclosed in leak proof plastic bags with absorbent material or, alternatively, directly into bags (heavy zip-locks) with absorbent material. Label cryovial box or zip-lock with NWHC case #, contact name, and species. Prevent dry ice or blue ice packs from damaging vials and leak proof plastic bags by wrapping in bubble-wrap or paper towels. Use freezer shipping containers (styrofoam cooler within cardboard box) as outer packaging. Tape packing list (see reverse) to top of styrofoam cooler, so it is visible when cardboard box is opened. Label outside of container "Diagnostic Specimens (Wildlife)." If dry ice is used, apply IATA label and declare dry ice on air bill. Vapor shippers can be used for sample transport ("Not restricted – dry shipper" and "IATA A800" on air bill). Useful websites:

Shipment of Diagnostic Specimens:

<http://depts.washington.edu/labweb/PatientCare/Clinical/Appendix/appk.pdf>

<http://www.cvm.uiuc.edu/vdl/CourierService.htm>

Information on transport of dry shippers:

http://www.zoo.ufl.edu/julian/dry_shipper/TipsDryShipper.pdf

Ship package by overnight express (FEDEX preferred; Mon-Wed, unless other prearrangement) to:

Diana Goldberg
National Wildlife Health Center
6006 Schroeder Road
Madison, WI 53711
Phone 608-274-2455

Note: Please notify NWHC of shipments through the web-based system found at <http://wildlifedisease.nbii.gov/ai>. Only authorized personnel have access: see your data administrator.

Field Data (see reverse)



National Wildlife Health Center
6006 Schroeder Road
Madison, WI 53711
Phone: 608.270.2400
FAX: 608.270.2415

SPECIMEN HISTORY FORM

Please FAX to USGS before shipping specimens. Also please call your Field Investigation Team member.

Submitter's name:

Affiliation:

Address:

Telephone:

E-mail:

Date collected:

Collector's Name:

Method of collection: [found dead, euthanized (describe method) etc.]

Species and Number Submitted:

Specific die-off location:

State:

County:

Latitude/longitude:

Environmental factors: (Record conditions such as storms, precipitation, temperature changes, or other changes that may contribute to stress.)

Disease onset: (The best estimate of when the outbreak started.)

Species affected: (The diversity of species affected may provide clues to the disease involved.)

Age/sex: (Any selective mortality related to age and sex?)

Morbidity/mortality: (Ratio of sick animals to dead animals.)

Known dead: (Actual pickup figures.)

Known sick:

Estimated dead: (Consider removal by scavengers or other means.)

Clinical signs: (Any unusual behavior and physical appearance.)

Population at risk: (Number of animals in the area that could be exposed to the disease.)

Population movement: (Recent changes in the number of animals on the area and their source or destination, if known.)

Problem area description: (Land use, habitat types, and other distinctive features.)

Comments: (Additional information/observations that may be of value such as past occurrences of disease in area.)

PLEASE USE ADDITIONAL SHEETS AS NECESSARY.

National Wildlife Health Center AI Sample Packing List

Sender's information

Name, affiliation: _____ Date sent: _____

Phone: _____ email: _____

NWHC case #: _____ Species: _____

Number of vials: _____ Location: _____

Shipped on: dry ice _____ vapor shipper _____ blue ice _____

NWHC use

Received by: _____ Date: _____

Logged in by: _____ Date: _____

Field data to send to NWHC:

Use the National HPAI Early Detection System through the Wildlife Disease Information Node

Visit <http://wildlifedisease.nbii.gov/ai>

Or contact: Josh Dein

Ph. 608-270-2450

joshua_dein@usgs.gov

Cross reference band or field number with NWHC case and accession number

Data fields include:

Band or ID #	GPS location
NWHC case #	Date collected
NWHC acc #	Sample type
Species	Submitter name, affiliation
Sex	Sampling strategy
Age	
Place name	

Employee Safety and Health for Avian Influenza Surveillance and Control Activities

This document provides interim guidance for protecting Department of the Interior (DOI) employees involved in surveillance activities and/or in response to an outbreak of H5N1 highly pathogenic avian influenza (H5N1 HPAI) among wildlife in the United States. Activities that could result in exposure to birds or wildlife infected with H5N1 HPAI include trapping and handling live birds, euthanasia, carcass collection and disposal, and cleaning and disinfection of equipment, vehicles, and personal protective equipment (PPE). Its purpose is to clarify and consolidate what is currently in the various avian influenza plans concerning health and safety issues. The protective measures have been developed in collaboration with the Centers for Disease Control and Prevention (CDC) and are consistent with those recommendations from the Occupational Safety and Health Administration (OSHA).

The safety and health precautions, including PPE, work practices, and personal hygiene practices, depend on the circumstances and the nature of the task being performed. However, the table below describes general activities and the required protective measures to minimize exposure. We realize this doesn't cover all tasks that may be assigned to DOI personnel. High exposure tasks not anticipated in the following table should be evaluated using risk assessment methodology in consultation with safety and health professionals.

These precautions are based on protecting individuals involved in the response to an outbreak of highly pathogenic avian influenza H5N1 from illness and the risk of viral reassortment (i.e., mixing of genes from human and avian viruses). The epidemiology of the H5N1 HPAI virus in wild birds is not fully known, but there are some reports of birds being infected without showing obvious signs of disease. Because of this, precautions should be taken even for birds appearing healthy when the H5N1 HPAI virus is suspected to exist within a bird population or a specific geographic area.

The risk and consequent recommendations are dependent on the suspected presence of the H5N1 HPAI virus in the wildlife being handled.

- If the H5N1 HPAI virus has not been detected in birds in North America and we have no reason to suspect that birds being handled would be infected at this time, then normal protective measures will suffice.
- If low pathogenicity H5N1 avian influenza virus is diagnosed, then normal protective measures will be adequate.
- When handling apparently healthy live birds, or sick or dead birds, within 6.2 miles (10km) of a site where the H5N1 HPAI virus has either been definitively diagnosed or is suspected in association with a bird mortality event, additional protective measures should be taken. (This 6.2 mile (10km) radius area where additional PPE should be worn mirrors with the “infected zone” that will be established by USDA as a containment measure in response to an occurrence of HPAI in birds and the “surveillance zone” applied by the European Union countries when managing H5N1 HPAI outbreaks in wild birds. Either may be adjusted outward as ecological, epidemiological, or administrative circumstances warrant.)
- When handling apparently healthy live birds outside of any designated “infected zone”, normal protective measures are adequate.
- If the H5N1 HPAI virus has been definitively diagnosed within wild birds within a migratory flyway, personnel handling sick or dead birds when responding to other mortality events within the flyway should exercise appropriate precaution and wear additional protective equipment.

When additional protective measures are called for, they should be applied for at least 30 days after the date of the last detection of HPAI H5N1 in wild birds.

Unvaccinated workers should receive the current season's influenza vaccine to reduce the possibility of dual infection with avian and human influenza viruses. There is a small possibility that dual infection could occur and result in reassortment.

At this time, in the absence of H5N1-infected wildlife, prophylactic use of influenza antiviral medications is not recommended for work that involves handling wild birds. Field staff who develop influenza symptoms within 10 days of working with wild birds should have access to medical care within 48 hours of symptom onset and should consider being tested for H5N1. If medical care cannot be obtained within 48 hours, the decision to carry antiviral medications should be made by an individual in consultation with their healthcare provider.

The following table gives minimum personal protective equipment; however, other PPE may be necessary depending on specific conditions of the worksite or the tasks. For instance, aprons, face shields or other protection to prevent contact with contaminated material may be useful and more easily cleaned and disinfected. A minimum of N95 respirators should be used for tasks that generate airborne particulates. The document reflects the greater risk of exposure when handling live birds which may create airborne particles and greater chance for fecal contamination, or when responding to a mortality event when there is reason to suspect the HPAI H5N1 virus as the disease agent. Proper work practices and personal hygiene are the primary protective measures for handling individual dead birds when airborne particles are not generated or contamination of clothing is not an issue and the presence of the HPAI H5N1 virus is not suspected.

This interim guidance on personal protective equipment will continue to be reevaluated as more information is available and as the characteristics of the pathogens are better defined.

ACTIVITY	CONDITIONS	ACTIVITY RISK	PPE	WORK PRACTICE
1) Handling apparently healthy birds	Highly Pathogenic Avian influenza H5N1 (HPAI H5N1) not suspected in the work area	No increase in HPAI H5N1 infection risk.	<ul style="list-style-type: none"> ◆Impereable (polyvinyl chloride (pvc), or nitrile) gloves ◆Goggles or safety glasses. (PPE for normal bird handling operations may include coveralls or lab coats)	Follow PPE and work practices for normal operations. <ol style="list-style-type: none"> 1) If working indoors, work in well-ventilated areas. 2) When working outdoors, work upwind of animals, to the extent practical, to decrease the risk of inhaling airborne particulate matter such as dust, feathers, or dander. Do not touch any part of exposed body (especially the face) with gloved hands. If gloves are torn or damaged: <ol style="list-style-type: none"> 1) Immediately but carefully remove them. 2) Thoroughly wash hands with soap and water (or an alcohol based hand gel when soap and water are not available.) 3) Don a fresh pair of gloves after hands are dry.
2) Investigating, handling or disposing of sick or dead birds associated with a wild bird mortality event	HPAI H5N1 not suspected in the work area	No increase in HPAI H5N1 infection risk.	<ul style="list-style-type: none"> ◆Impermeable (pvc or nitrile) gloves and protection from claw wounds ◆Goggles ◆NIOSH approved particulate respirator, N-95 or better.* ◆Disposable gowns or coveralls. ◆Rubber boots or boot covers 	Use accepted precautions for working with any avian disease to protect employee and for disease containment to prevent or control transmission to other wildlife. Do not touch any part of exposed body (especially the face) with gloved hands. See torn or damaged gloves under activity 1. Remove PPE in the following order: <ol style="list-style-type: none"> 1) Carefully remove coveralls and boot covers and discard as contaminated material if disposable. 2) Disinfect rubber boots. 3) Remove gloves and immediately wash hands thoroughly with soap and water (or an alcohol-based hand gel when soap and water are not available). 4) Remove eye protection and place in designated receptacle for subsequent cleaning and disinfection. 5) Remove N-95 disposable respirator and discard. 6) Immediately after all PPE has been removed, wash hands thoroughly a second time.
3) Collecting single dead birds or multiple dead birds handled individually.	HPAI H5N1 not suspected in the work area	No increase in HPAI H5N1 infection risk.	<ul style="list-style-type: none"> ◆Impermeable (pvc or nitrile) gloves. ◆Eye protection. 	Bag birds using technique to minimize contact and generation of airborne contaminated particulate material. Dispose of bag and gloves appropriately. Do not touch any part of exposed body (especially the face) with gloved hands. See torn or damaged gloves under activity 1.
4) Small scale cleaning and disinfecting equipment known or suspected to be contaminated with	Definitive diagnosis of HPAI H5N1, or presumptive H5N1 diagnosis in association	Low risk of HPAI H5N1 infection risk due to aerosolization of contaminated particles or soiling of clothing from contact with contaminated	<ul style="list-style-type: none"> ◆Impermeable (pvc or nitrile) gloves ◆Goggles 	Surfaces should be cleaned with detergent and water and then sanitized. Useful sanitizing solutions include: <ol style="list-style-type: none"> 1) 1% solution of household bleach [1.25 oz or about 8 teaspoons of bleach (5.25 % sodium hypochlorite) per gallon of water] for hard, non-porous surfaces. 2) 5% solution of household bleach for porous surfaces; 3) 5% hospital-grade Lysol® or other EPA-approved disinfectants.

avian influenza virus.	with bird mortality**, within 6.2 miles of the work area	material.		<p>4) Use of disposable disinfectant wipes may be appropriate for some applications. Do not touch any part of exposed body (especially the face) with gloved hands. See torn or damaged gloves under activity 1.</p> <p>Remove eye protection after hands have been washed and place in designated receptacle for subsequent cleaning and disinfection. Clean hands with soap and water a second time (or an alcohol-based hand gel when soap and water are not available) immediately after PPE is removed.</p>
5) Large scale decon or cleaning operations involving dusty conditions or risk of aerosolizing contaminants.	Definitive diagnosis of HPAI H5N1, or presumptive H5N1 diagnosis in association with bird mortality**, within 6.2 miles of the work area	Increased risk of HPAI H5N1 infection due to aerosolization of contaminated material or soiling of clothing with contaminated material.	<p>◆Impermeable (pvc or nitrile) gloves</p> <p>◆Goggles</p> <p>◆NIOSH approved particulate respirator, N-95 or better.*</p> <p>◆disposable gowns or coveralls</p> <p>◆Rubber boots or disposable boot covers</p>	<p>Avoid generating mists with water sprayers during equipment decon procedures (i.e. hosing out the bed of a contaminated truck, hosing off contaminated equipment, etc.) Use general cleaning and sanitizing procedures listed above.</p> <p>Do not touch any part of exposed body (especially the face) with gloved hands. See torn or damaged gloves under activity 1.</p> <p>See work practices under activity 2 for proper procedure for removal of PPE.</p>
6) Handling apparently healthy birds	Definitive diagnosis of HPAI H5N1, or presumptive H5N1 diagnosis in association with bird mortality**, within 6.2 miles of work area	Increased risk of HPAI H5N1 infection due to aerosolization of contaminated material via dust generation or soiling of clothing with contaminated material.	<p>◆Impermeable (pvc or nitrile) gloves</p> <p>◆Goggles</p> <p>◆NIOSH approved particulate respirator, N-95 or better.*</p> <p>◆disposable gowns or coveralls</p> <p>◆Rubber boots or boot covers</p>	<p>Same hygiene practices as above.</p> <p>1) If working indoors, work in well-ventilated areas.</p> <p>2) When working outdoors, work upwind of animals, to the extent practical, to decrease the risk of inhaling airborne particulate matter such as dust, feathers, or dander.</p> <p>Do not touch any part of exposed body (especially the face) with gloved hands. See torn or damaged gloves under activity 1.</p> <p>See work practices under activity 2 for proper procedure for removal of PPE.</p>

7) Investigating, handling, and/or disposing of carcasses from wild bird mortality event.	Definitive diagnosis of HPAI H5N1, or presumptive H5N1 diagnosis in association with bird mortality**, within the flyway within previous 30 days	Increased risk of HPAI H5N1 infection due to aerosolization of contaminated material via dust generation or soiling of clothing with contaminated material.	<ul style="list-style-type: none"> ◆Impermeable (pvc or nitrile) gloves ◆Goggles ◆NIOSH approved particulate respirator, N-95 or better.* ◆Disposable gowns or coveralls ◆Rubber boots or boot covers 	<p>Same hygiene practices as above.</p> <p>Use dust suppression techniques. Use work practices to minimize direct contact with birds and secretions, feathers and danger.</p> <p>Do not touch any part of exposed body (especially the face) with gloved hands. See torn or damaged gloves under activity 1.</p> <p>See work practices under activity 2 for proper procedure for removal of PPE.</p> <p>Note: If oils are used for dust suppression, use NIOSH-approved respirators that are rated for use with oils, R-95 (somewhat oil resistant) or P-95 (strongly oil resistant) respirators.</p>
8) Wildlife inspectors (Port of Entry)	Handling import shipments of wild birds (i.e. port of entry operations) Presence of avian influenza - unknown.	Possibility of dust generation and direct contact with bird secretions, feathers and dander.	<ul style="list-style-type: none"> ◆Impermeable (pvc or nitrile) gloves ◆Goggles ◆NIOSH approved particulate respirator, N-95 or better.* ◆Disposable gowns or coveralls ◆Shoe covers 	<p>Following established practices including decon procedures as described in wildlife inspector training manual.</p> <p>Do not touch any part of exposed body (especially the face) with gloved hands. See torn or damaged gloves under activity 1.</p> <p>See work practices under activity 2 for proper procedure for removal of PPE.</p>

* Use of respirators including N-95 filtering facepiece respirators requires implementing a Respiratory Protection Program as required by OSHA. This includes training, fit-testing, and fit-checking to ensure appropriate respirator selection and use. To be effective, respirators must provide a proper sealing surface on the wearer's face. Detailed information on respiratory protection programs is provided at: www.osha.gov/SLTC/etools/respiratory/index.html and www.cdc.gov/niosh/topics/respirators/.

** Refers to situations where the USDA National Veterinary Services Laboratory has made a definitive diagnosis of H5N1 HPAI in a wild bird or a presumptive diagnosis of an H5N1 avian influenza virus from a wild bird found dead or moribund.

Strict adherence to hygiene and sanitation practices is required for all operations.

- Do not eat, drink, or smoke, or any other activity (such as handling equipment, using cellphones, etc) which puts your hands in or near your eyes, nose, or mouth while handling animals until you can wash your hands.
- Avoid unnecessary contact with animals or animal tissue.
- Educate employees about importance of hand washing in controlling disease transmission. Hands should be washed after contact with contaminated surfaces, after removing gloves, after sneezing, using the bathroom, handling garbage, contact with wildlife, soils and similar activities, and before preparing or eating food, smoking, drinking, applying cosmetics, lip balm, or lotions.

Proper hand washing:

1. First wet your hands and apply liquid or clean bar soap. Place the bar soap on a rack and allow it to drain.
2. Next rub you hands vigorously together and scrub all surfaces
3. Continue for 10-15 seconds. It is the soap combined with the scrubbing action that helps dislodge and remove germs.
4. Rinse well and dry your hands.
5. Alcohol-based sanitizing hand rubs or sanitizing cloths may be used as a temporary solution when hand washing facilities are not available. Portable field hand washing facilities are easily rigged and transported.

Medical Evaluation

For those in direct contact with live or dead wildlife or with materials contaminated with their secretions:

- Medical consultations should be available via telephone/sat phone for remote operations.
- Instruct workers to be vigilant for the development of fever, respiratory symptoms, and/or conjunctivitis (i.e., eye infections) for 1 week after last exposure to avian influenza-infected or exposed birds or to potentially avian influenza-contaminated environmental surfaces.
- Individuals who become ill should seek medical care and prior to arrival notify their health care provider that they may have been exposed to avian influenza. In addition, employees should notify their health and safety representative. They should limit contact with others if at all possible. People who have been in close contact with the symptomatic employee should be informed. The symptomatic individual should wear a disposable facemask and practice good respiratory and hand hygiene to reduce the transmission of aerosolized droplets while in transit.
- With the exception of visiting a health care provider, individuals who become ill should be advised to stay home until 24 hours after resolution of fever, unless an alternative diagnosis is established or diagnostic test results indicate the patient is not infected with influenza A virus.
- The suspect case's work station and quarters should be cleaned and disinfected, as indicated in the section on workplace cleaning.
- While at home, ill persons should practice good respiratory and hand hygiene to lower the risk of transmission of virus to others. For more information, visit CDC's "[Cover Your Cough](#)" website .